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EXAMINER	
SYED, FARHAN M	
ART UNIT	PAPER NUMBER
2165	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/716,286	DEVANATHAN ET AL.	
	Examiner	Art Unit	
	Farhan M. Syed	2165	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 October 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-38 are pending.

Response to Remarks

Specification/Abstract

2. Applicant's arguments, page 26-27, filed 17 October 2006, with respect to the Applicant's specifications have been fully considered and are persuasive. The objection of the Applicant's specifications in the Examiner's office action dated 12 May 2006 has been withdrawn.

Drawing

3. Applicant's arguments, see page 26, filed 17 October 2006, with respect to the Applicant's drawings have been fully considered and are persuasive. The objection of the Applicant's drawings in the Examiner's office action dated 12 May 2006 has been withdrawn.

Terminal Disclaimer

4. The terminal disclaimer filed on 27 October 2006 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 101

5. Applicant's arguments filed 17 October 2006 have been fully considered but they are not persuasive. The Examiner disagrees with the Applicant's analysis of a carrier

wave. The Examiner is not refuting the use of RF waves, but instead the use of the words carrier wave or a signal modulated by a carrier. The Examiner will continue to rely on the Interim Guidelines, as explained in the previous office action, dated 12 May 2006, as the basis for rejection of claims 15 and 21.

Claim Rejections - 35 USC § 112

6. Applicant's arguments, pages 20-23, filed 17 October 2006, with respect to the rejection of claims 1, 4, 5, 8, 10, 11, 15, 18, 19, 21, 22, 24, 25, 30, 31, 33, 34, and 36 under 35 USC § 112 have been fully considered and are persuasive. The rejection of claims 1, 4, 5, 8, 10, 11, 15, 18, 19, 21, 22, 24, 25, 30, 31, 33, 34, and 36 in the Examiner's office action dated 12 May 2006 has been withdrawn.

Response to Argument

7. Applicant's arguments filed 18 July 2006 have been fully considered but they are not persuasive for the reasons set forth below.

Applicant argues:

(1) "Teorey does not disclose, either inherently or explicitly, the following element: converting logical aspects of a common warehouse model (CWM) to corresponding design items for a relational database by processing in a hierarchical manner the logical aspects and creating the corresponding design items, the logical aspects comprising entity-relationship (ER) libraries, the ER libraries comprising ER

models, the corresponding design items comprising design libraries, the design libraries comprising design models."

The Examiner disagrees. Common Warehouse Model (CWM) is an instance of a data warehouse model, that is defined in the Microsoft Computer Dictionary, 5th Ed., as 'A database, frequently very large, that can access all of a company's information. While the warehouse can be distributed over several computers and many contain several databases and information from numerous sources in a variety of formats, it should be accessible through a server. Thus, access to the warehouse is transparent to the user, who can use simple commands to retrieve and analyze all the information...' Furthermore, the Applicant states in the specification that CWM stems from UML, which is an instance of object-oriented programming. Object-oriented programming has existed from the 1970s. Given that the Examiner is allowed the broadest interpretation of the claims, the prior art of record clearly anticipates the recited claims. Therefore, the rejection with this cited prior art is sustained.

(2) "Farpinyo discloses that a tool called ER2CWM can create CWM relational database schemas from physical data models represented by ER diagrams, but does not disclose the methodology."

The Examiner respectfully disagrees. The methodology of the use of ER2CWM is clearly anticipated by prior art of record, wherein Sections 3 and 4 clearly illustrates the use of ER2CWM. An ordinary person skilled in the art clearly understands that the steps required to execute a tool like ER2CWM to create CWM relational database schemas

from physical data models represented by ER diagrams must include the steps that are recited in claims 1, 21, and 41. This methodology is fundamental, let alone the essence of creating relational schemas with a CWM-Based tool.

Hence, the Applicant's arguments do not distinguish over the claimed invention over the prior art of record.

(3) "The Examiner admits that Shinjo does not refer to CWM. Since Shinjo does not refer to CWM, Shinjo cannot possibly teach any one of the elements in claims 1, 13, 15, and 27."

The Examiner respectfully disagrees. When using any type of database system, whether it is hierarchical, network based, relational, or object-oriented, etc., the data stored in such databases may be manipulated through an object-oriented programming language, such as UML, XML, C++, Java, etc. via the use of SQL. Since the Examiner has already explained CWM as an instance of data warehouse modeling, which is clearly taught in this prior art of record (see at least paragraphs [0009-0013]), the Examiner clearly believes that CWM is implicitly anticipated. Thus, Shinjo teaches each and every element of claims 1, 13, 15, and 27 and therefore the rejections are sustained.

(4) "Teorey and Farpinyo, taken alone or in any combination, do not disclose or suggest, or render obvious, any of the following elements (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library;

(c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models."

The Examiner respectfully disagrees. Farpinyo teaches (a) scanning through the ER libraries (i.e. *"DBMS Information – This module, via JDBC, creates database schema from CWM Relational metadata, reads in existing database schemas to create CWM Relational metadata and ER diagrams, and maintains information about DBMSes that ER2CWM supports, i.e. SQL data types and database commands for creating and reading in schemas. DBMSes on which ER2CWM have been tested are Sybase Adaptive Server v.11.9.2 [9] and Microsoft SQL Server 2000 [10]. Other DBMSes can be supported by providing ER2CWM with .jar files that contain corresponding DBMS information."* The preceding text clearly indicates that ER2CWM supports SQL data types and database commands for creating and reading schemas. It is clear that in order to create and read schemas, scanning of ER libraries must be performed. Figure 3 clearly illustrates such example.)(Page 459, paragraph 3); (b) for a first of the ER libraries, creating a corresponding first design library (i.e. *"A simple example of a student database is given here. We discuss a scenario in which a database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4 (a). The tool then generates a corresponding CWM Relational metadata for this design (Table 1). The designer later change to create a database schema for MS SQL Server instead by using the CWM metadata generated earlier2. Figure 4 (b) shows the result of schema creation obtained from SQL Server Enterprise Manager, the management tool for MS SQL Server."* The preceding text clearly anticipates creating a corresponding first design library in the relational database, where the database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4.)(Page

460, section 4); (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information (i.e. *"A simple example of a student database is given here. We discuss a scenario in which a database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4 (a). The tool then generates a corresponding CWM Relational metadata for this design (Table 1). The designer later change to create a database schema for MS SQL Server instead by using the CWM metadata generated earlier2. Figure 4 (b) shows the result of schema creation obtained from SQL Server Enterprise Manager, the management tool for MS SQL Server."* The preceding text clearly indicates creating a corresponding design model in the corresponding first design library that holds the corresponding information, when the tool then generates a corresponding CWM Relational metadata for this design.)(Page 460, section 4); (d) processing each of the ER models to produce corresponding information for the corresponding design model (i.e. *"A simple example of a student database is given here. We discuss a scenario in which a database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4 (a). The tool then generates a corresponding CWM Relational metadata for this design (Table 1). The designer later change to create a database schema for MS SQL Server instead by using the CWM metadata generated earlier2. Figure 4 (b) shows the result of schema creation obtained from SQL Server Enterprise Manager, the management tool for MS SQL Server."* The preceding text clearly indicates the processing each of the relational schema (ER models) to produce corresponding information for the corresponding design model, where Figure 4(b) shows the result of schema creation obtained from SQL Server Enterprise Manager...)(Page 460, section 4) (For the remainder of steps b-d are steps found in the user manual of the ER2CWM tool at http://www.powerbitz.com/er2cwm.)(Page 461, paragraph 1) (e) determining if there are any references between the ER models (i.e. *"A simple example of a student database is given here. We discuss a scenario in which a database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4 (a). The tool then*

generates a corresponding CWM Relational metadata for this design (Table 1). The designer later change to create a database schema for MS SQL Server instead by using the CWM metadata generated earlier2. Figure 4 (b) shows the result of schema creation obtained from SQL Server Enterprise Manager, the management tool for MS SQL Server." The preceding text clearly indicates that when the tool then generates a corresponding CWM Relational metadata design, clearly anticipates the step of determining if there are any references between the ER models., where Figure 4(b) shows the result of schema creation obtained from SQL Server Enterprise Manager...)(Page 460, section 4); and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models (i.e. *"A simple example of a student database is given here. We discuss a scenario in which a database designer first selects Sybase Adaptive Server as a target of the design and draws an ER diagram in Figure 4 (a). The tool then generates a corresponding CWM Relational metadata for this design (Table 1). The designer later change to create a database schema for MS SQL Server instead by using the CWM metadata generated earlier2. Figure 4 (b) shows the result of schema creation obtained from SQL Server Enterprise Manager, the management tool for MS SQL Server."* The preceding text clearly indicates the processing each of the relational schema to produce corresponding information for the corresponding design models, where Figure 4(b) shows the result of schema creation obtained from SQL Server Enterprise Manager...)(Page 460, section 4).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein converting comprises the operations of: (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the

corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

(5) In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments is general knowledge available to an ordinary person skilled in the art at that time.

Any other arguments by the applicant are either more limiting than the claimed language or completely irrelevant.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 13, 15, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by a non-patent literature titled "A Logical Design Methodology for Relational Database Using the Extended Entity-Relationship Model" by Toby J. Teorey, Dongqing Yang, and James P. Fry, ACM Computing Survey (CSUR), June 1986, vol. 18, issue 2 (and known hereinafter as Teorey).

As per claims 1, 13, 15, and 27, Teorey teaches a method comprising: converting logical aspects of a common warehouse model (CWM) to corresponding design items for a relational database by processing in a hierarchical manner the logical aspects and creating the corresponding design items, the logical aspects comprising entity-relationship (ER) libraries, the ER libraries comprising ER models, the corresponding design items comprising design libraries, the design libraries comprising design models (i.e. *"A database design methodology is defined for the design of large relational databases. First, the data requirements are conceptualized using an extended entity-relationship model, with the extensions being additional semantics such as ternary relationships, optional relationships, and the generalization abstraction. The extended entity-relationship model is then decomposed according to a set of basic entity-relationship constructs, and these are transformed into candidate relations."*)(Abstract).

10. Claims 1, 13, 15, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by a non-patent literature titled "Designing and Creating Relational Schemas with a CWM-Based Tool" by Kumpon Farpinyo and Twittie Senivongse, pages 456-461, 2002 (known hereinafter as Farpinyo).

As per claims 1, 13, 15, and 27, Farpinyo teaches a method comprising: converting logical aspects of a common warehouse model (CWM) to corresponding design items for a relational database by processing in a hierarchical manner the logical aspects and creating the corresponding design items, the logical aspects comprising entity-relationship (ER) libraries, the ER libraries comprising ER models, the corresponding design items comprising design libraries, the design libraries comprising design models (i.e. *"This paper presents a design and development of a tool called ER2CWM that creates CWM relational database schemas from physical data models represented by ER diagrams. The tool supports the creation of ER diagrams, transformation into CWM format, and creation of database schemas for relational database management systems. It can also transform database schemas back into CWM and ER diagrams respectively." "ER diagrams are generally used to express designs of relational databases [1]. There are tools, such as PowerDesigner [2] and Erwim [3], that can help database designers to design a database with ER diagrams and create database schemas. These tools usually support the reverse of the process to create ER diagrams from existing database schemas also. All these are done via intermediate schema representations that are specific to individual design tools. This means, for example, PowerDesigner and Erwim both have their own metadata format that represents ER models and is used to create database schemas. This situation is not convenient for the designers to export a database schema designed and created by one tool to other working environments*

since specific mappng between the metadata of the source environment and the one understood by the target will be required for each pair of the exchanging environment.")(Abstract; page 456, paragraph 1).

11. Claims 1, 13, 15, and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by Shinjo (U.S. Patent Pub. 2004/0133581 A1).

As per claims 1, 13, 15, and 27, Shinjo teaches a method comprising: converting logical aspects of a common warehouse model (CWM) to corresponding design items for a relational database by processing in a hierarchical manner the logical aspects and creating the corresponding design items, the logical aspects comprising entity-relationship (ER) libraries, the ER libraries comprising ER models, the corresponding design items comprising design libraries, the design libraries comprising design models (i.e. *"When a relational database is generated, conceptual design, logical design, and physical design are required. In each designing process, a model of a set of data structure describing a data format, data relation, integrity constraint, etc. is generated as a schema. In the conceptual design, a concept model is generated by describing a part of a target real world in predetermined notation. In the logical design, a logical model is generated using a table, an index, and a data structure viewed from the user interface 110 (referred to as a "view") as a logical data structure of a practical database model. In the physical design, the representation format of the storage device of a hard disk, etc., a file organization, an access method, contents of data, etc. are determined. In the conceptual design, an entity relationship model (E-R model) is frequently used in representing a model of a target real world. In the entity relationship model, there are two concepts, that is, an "entity" and a "relation". An entity refers to an inclusive description of an object to be recognized when a database designer designs a model of a target real world. Various characteristics of an entity are represented by "attributes". A relation refers to a model of the correlation*

between two or more entities." The preceding text clearly indicates that an E-R model is frequently used to convert data from a source into a relational database. It is well known in the art that when creating a logical or conceptual design that there exists models and libraries within the ER-Model which corresponds to the models and libraries of a relational database. Although the primary reference does not refer to CWM, it is an intended use to convert CWM information into a relational database through an ER Model.)(page 1, paragraphs [009]-[0010]).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 2-12, 14, 16-26, 28-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over a non-patent literature titled "A Logical Design Methodology for Relational Database Using the Extended Entity-Relationship Model" by Toby J. Teorey, Dongqing Yang, and James P. Fry, ACM Computing Survey (CSUR), June 1986, vol. 18, issue 2 (and known hereinafter as Teorey) in view of a non-patent literature titled "Designing and Creating Relational Schemas with a CWM-Based Tool" by Kumpon Farpinyo and Twittie Senivongse, pages 456-461, 2002 (known hereinafter as Farpinyo).

As per claims 2, Teorey does not explicitly teaches a method wherein converting comprises the operations of: (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models.

Farpinyo teaches a method wherein converting comprises the operations of: (a) scanning through the ER libraries (i.e. *"DBMS Information – This modue, via JDBC, creates database schema from CWM Relational metadata, reads in existing database schemas to create CWM Relational metadata and ER diagrams, and maintains information about DBMSes that ER2CWM supports, i.e. SQL data types and database commands for creating and reading in schemas. DBMSes on which ER2CWM have been tested are Sybase Adaptive Server v.11.9.2 [9] and Microsoft SQL Server 2000 [10]. Other DBMSes can be supported by providing ER2CWM with .jar files that contain corresponding DBMS information."* The preceding text clearly indicates that ER2CWM supports SQL data types and database commands for creating and reading schemas. It is clear that in order to create and read schemas, scanning of ER libraries must be performed. Figure 3 clearly illustrates such example.)(Page 459, paragraph 3); (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there

are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models (For the remainder of steps b-f are steps found in the user manual of the ER2CWM tool.)(Page 461, paragraph 1).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein converting comprises the operations of: (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

As per claims 3, Teorey does not explicitly teach a method wherein, in operation (d), each of the ER models is processed independently.

Farpinyo teaches a method wherein, in operation (d), each of the ER models is processed independently (Figures 1-11 steps through the process of creating an ER model and then converting it into a relational database. This process is a continuous process, where each ER model is

created independently from the other, until the user completes the desired relational database specifications.)(Figures 1-11).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein, in operation (d), each of the ER models is processed independently with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

As per claim 4, Teorey teaches the method of processing entity subtype relationships in the first ER model (i.e. *"Adopting an ER extension called the entity-category-relationship model, Navathe and others have organized the different classes of objects and relationships into forms that are either compatible or incompatible for view integration. A category is defined as a subset of entities from an entity type, thus representing a form of generalization hierarchy."* The preceding text clearly indicates that subtype relationships are a subset of entities and the first ER model is an entity type.)(page 206, paragraph 5); and processing non-subtype relationships in the first ER model (i.e. *"The integration process is applied to four possible forms of object class similarity: identical domains, contained (subset) domains, overlapping domains, and disjointed domains."* The previous text clearly indicates that disjointed domains are a form of a non-subtype relationship within the ER model.)(page 206-207, paragraph 6).

Teorey does not explicitly teach a method wherein operation (d) comprises: processing ER subject areas included in a first of the ER models; processing ER domains included in the first ER model; processing domain inheritance for each of the ER domains; and processing ER entities included in the first ER model.

Farpinyo teaches a method wherein operation (d) comprises: processing ER subject areas included in a first of the ER models; processing ER domains included in the first ER model; processing domain inheritance for each of the ER domains; and processing ER entities included in the first ER model. (Figures 1-11 steps through the process of creating an ER model and then converting it into a relational database. This process is a continuous process, where each ER model is created independently from the other, until the user completes the desired relational database specifications.)(Figures 1-11).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein operation (d) comprises: processing ER subject areas included in a first of the ER models; processing ER domains included in the first ER model; processing domain inheritance for each of the ER domains; and processing ER entities included in the first ER model with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

As per claims 5, Teorey teaches a method wherein processing ER subject areas comprises: for each of the ER subject areas included in the first ER model, creating a corresponding design subject area in the corresponding first design model (i.e. *"...third, it defines mappings between equivalent attributes of corresponding object classes."* The previous text clearly indicates that attributes are associated to an ER model and object classes are associated to a relational database, thus establishing correspondence between an ER model and a relational database design model.)(page 206, paragraph 6).

As per claims 6, Teorey teaches a method wherein processing domains comprises: for each of the ER domains included in the first ER model, creating a corresponding design domain in the corresponding first design model (i.e. *"The integration process is applied to four possible forms of object class similarity: identical domains, contained (subset) domains, overlapping domains, and disjoint domains."* The preceding text clearly indicates that creating is integration process.)(Page 206-207, paragraph 6); determining parameters for each of the ER domains, including base type, default and constraint (i.e. *"Relationships are classified in terms of their degree, the role of each object class in the relationship and various constraints, such as cardinality constraints that may differ among object classes."* The previous text clearly illustrates a type of parameter for each ER domain such as type and constraint, where type is the role of each object class and constraint is an instance of various constraints.)(Page 207, paragraph 1); and setting corresponding parameters for each of the corresponding design domains.

As per claims 7, Teorey teaches a method wherein processing domain inheritance comprises: determining, for a first of the ER domains, whether there is a first generalization in the CWM that links the first ER domain (i.e. *"A generalization hierarchy occurs when an entity (which we call the generic entity) in partitioned by different values of a common attribute (Figure 2b). For example, the entity EMPLOYEE is a generalization of ENGINEER, SECRETARY, and TECHNICIAN."* The preceding text clearly illustrates a link in the first ER domain, which could be an ENGINEER, SECRETARY, or TECHNICIAN.)(Page 201, paragraph 4); if there is the first generalization, determining parent ER domain and child ER domain for the first generalization, the parent and child ER domains corresponding to corresponding parent and child design domains (i.e. *"A generalization hierarchy occurs when an entity (which we call the*

generic entity) in partitioned by different values of a common attribute (Figure 2b). For example, the entity EMPLOYEE is a generalization of ENGINEER, SECRETARY, and TECHNICIAN." The preceding text clearly indicates that the parent design domain may be the ENGINEER, SECRETARY, and TECHNICIAN and the child domain is an EMPLOYEE.)(Page 201, paragraph 4); and creating inheritance link from the corresponding child design domain to the corresponding parent design domain (Figure 5 illustrates the inheritance link between the student, club, and school, where belongs-to, located-in, and attends are links between the domains.)(Figure 5).

As per claims 8, Teorey teaches a method wherein processing ER entities comprises: for a first ER entity included in the first ER model, creating a corresponding first design entity in the corresponding first design model (i.e. *"On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."* The preceding text clearly illustrates that the first ER entity in the first ER model is the ER construct, creating a corresponding design entity is the transformation of the relationship into a set of candidate relations using the set of mapping rules. That is, for each ER entity, the transformation creates a parallel design entity in the relational database.)(Page 199, paragraph 2); determining first ER subject areas associated with the first ER entity, the first ER subject areas corresponding to first design subject areas (i.e. *"On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."* With the set of mapping rules contains the subject area of which the first ER entity will correspond to the design entity of the relational database. An ordinary person skilled on the art would understand that each relationship and its associated entities would include the subject area of the ER entity, when creating the subject area of the design entity.)(Page 199, paragraph 2); adding the corresponding first design entity as a member of the corresponding first design subject areas (i.e. *"On the basis of a categorization of extended ER constructs and a set of*

mapping rules, each relationship and its associated entities are transformed into a set of candidate relations." Based on the reasoning above the set of mapping rules contains the corresponding first design entity as a member of the corresponding first design subject area.)(Page 199, paragraph 2); and processing attributes associated with the first ER entity (i.e. *"On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."* The transformation of the relationship establishes that the processing of attributes associated with the first ER entity.)(Page 199, paragraph 2).

As per claims 9, Teorey teaches a method wherein processing attributes associated with the first ER entity comprises: creating a first design attribute to correspond to the first ER attribute (i.e. *"Attach attributes to entities that describe most directly. For example, attribute OFFICE-BUILDING should be an attribute of the entity DEPARTMENT instead of the entity EMPLOYEE." "Our example is drawn from a company personnel and project database EER schema, illustrated in Figure 7 (Section 2.2), which indicates the transformation of all types of EER constructs to relations"* The preceding text clearly indicates that an ER attribute is created and then corresponds to a design attribute based on Figure 8.)(page 204, paragraph 8); attaching the design attribute to the first design entity (i.e. *"Attach attributes to entities that describe most directly. For example, attribute OFFICE-BUILDING should be an attribute of the entity DEPARTMENT instead of the entity EMPLOYEE." "On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."*)(page 204, paragraph 8; page 199, paragraph 2); setting type reference of the first design attribute (i.e. *"Attach attributes to entities that describe most directly. For example, attribute OFFICE-BUILDING should be an attribute of the entity DEPARTMENT instead of the entity EMPLOYEE." "On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."*)(page 204, paragraph 8;

page 199, paragraph 2); determining whether the first ER attribute is part of a first ER primary key associated with the first ER entity (i.e. *"The many-to-many relationship, shown here as totally optional, requires a relationship relation with primary keys of both entities (Figure 8f). The same transformation applies to either the optional or mandatory case."*)(pages 208-210, paragraph 10); and if the first ER attribute is part of the first ER primary key, flagging the first design attribute as pad of a first design primary key associated with the first design entity.

As per claims 10, Teorey teaches a method wherein processing entity subtype relationships comprises: determining whether there is a first CWM generalization that links two of the ER entities in the first ER model (i.e. *"The transformation of disjoint subset generalization produces a separate relation for the whole set (the generic entity) and each of the subsets."*)(Page 210, paragraph 4); if there is the first CWM generalization, determining parent and child ER entities for the first CWM generalization, the parent and child ER entities corresponding to corresponding parent and child design entities (i.e. *"A generalization hierarchy occurs when an entity (which we call the generic entity) in partitioned by different values of a common attribute (Figure 2b). For example, the entity EMPLOYEE is a generalization of ENGINEER, SECRETARY, and TECHNICIAN."* The preceding text clearly indicates that the parent design domain may be the ENGINEER, SECRETARY, and TECHNICIAN and the child domain is an EMPLOYEE.)(Page 201, paragraph 4); and creating inheritance link from the corresponding child design entity to the corresponding parent design entity (Figure 5 illustrates the inheritance link between the student, club, and school, where belongs-to, located-in, and attends are links between the domains.)(Figure 5).

As per claims 11, Teorey teaches a method wherein processing non-subtype relationships comprises: obtaining references to parent and child ER entities in a first ER relationship, the parent and child ER entities corresponding to parent and child design entities in the first design model (i.e. *"Entity relation with the embedded foreign key of the parent entity. This transformation always occurs with binary relationships that are one to many for the entity on the many (child) side and the one to one for the entities, and with a unary relationship that is one to one or one to many for each entity"*)(Page 208, paragraph 5); creating a corresponding design link between the corresponding parent and child design entities in the first design model (Figure 5 illustrates the design link between the student, club, and school, where belongs-to, located-in, and attends are links between the domains.)(Figure 5); setting cardinality and relationship type for the corresponding design link (i.e. *"The actual number associated with the term "many" is called the cardinality of the connectivity. Cardinality may be represented by upper and lower bounds. Figure 3 shows the basic constricts for connectivity: one to one (unary or binary relationship) one to many (unary or binary relationship), and many to many (unary or binary relationship)."*)(Page 201, paragraph 9); determining whether first ER relationship has at least one referential rule (i.e. *"We now look at each EER construct in more detail to see how each transformation rule is defined and applied."* The preceding text clearly indicates that at least one transformation rule is defined and applied, where the transformation rule is a referential rule.)(Page 208, paragraph 2); and if the first ER relationship has at least one referential rule, processing the at least one referential rule (i.e. *"On the basis of a categorization of extended ER constructs and a set of mapping rules, each relationship and its associated entities are transformed into a set of candidate relations."*)(Page 199, paragraph 2).

As per claims 12, Teorey teaches a method wherein processing the at least one referential rule comprises; obtaining parameters including "inset" "update" and "delete"

from the CWM; setting corresponding parameters for the corresponding design link (Figure 5 illustrates the design link between the student, club, and school, where belongs-to, located-in, and attends are links between the domains.)(Figure 5); determining whether there is an ER attribute in the child ER entity that has migrated from the parent ER entity (i.e. *"Entity relation with the embedded foreign key of the parent entity. This transformation always occurs with binary relationships that are one to many for the entity on the many (child) side and the one to one for the entities, and with a unary relationship that is one to one or one to many for each entity"*)(Page 208, paragraph 5); and if there is such an ER attribute corresponding to a design attribute, then: creating a design foreign key under the child design entity (i.e. *"In both the mandatory case (Figure 9a) and the optional case (Figure 9b) the pairing entity key appears as a foreign key in the resulting relation"* The preceding text clearly indicates that the resulting relation is the design entity and the foreign key is the design foreign key.)(Page 210, paragraph 1); and creating references to the corresponding design attribute (i.e. *"In both cases the two key attributes are taken from the same domain but are given different names to designate their unique use."*)(Page 210, paragraph 1).

Teorey does not teach a method wherein processing the at least one referential rule comprises; obtaining parameters including "inset" "update" and "delete" from the CWM.

Farpinyo teaches a method wherein processing the at least one referential rule comprises; obtaining parameters including "inset" "update" and "delete" from the CWM (i.e. *"ER Editor – This is the editor for designing physical data models with ER diagrams based on CODASYL [8]. It is also a GUI of ER2CWM; database designers can create CWM Relational metadata, select DBMSes to create database schemas, or create CWM Relational metadata and ER diagrams from existing relational databases."* The preceding text clearly illustrates that an ER editor would contain an

insert, update and delete parameters, which when selecting these commands would be a referential rule.)(Page 459, paragraph 1).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein processing the at least one referential rule comprises; obtaining parameters including "inset" "update" and "delete" from the CWM with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

As per claim 14, Teorey does not explicitly teach a method wherein converting logical aspects comprises the operations of: (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models; and wherein converting physical aspects comprises:(g) scanning through the relational catalogs; (h) for a first of the relational catalogs, creating a corresponding first DBMS catalog in the relational database; (i) for each of the relational schemas in the first relational catalog, creating a corresponding DBMS schema in the corresponding DBMS catalog to hold corresponding information; and (j)

processing each of the relational schemas to produce corresponding information for the corresponding DBMS schema.

Farpinyo teaches a method wherein converting logical aspects comprises the operations of: (a) scanning through the ER libraries (i.e. *"DBMS Information – This modue, via JDBC, creates database schema from CWM Relational metadata, reads in existing database schemas to create CWM Relational metadata and ER diagrams, and maintains information about DBMSes that ER2CWM supports, i.e. SQL data types and database commands for creating and reading in schemas. DBMSes on which ER2CWM have been tested are Sybase Adaptive Server v.11.9.2 [9] and Microsoft SQL Server 2000 [10]. Other DBMSes can be supported by providing ER2CWM with .jar files that contain corresponding DBMS information."* The preceding text clearly indicates that ER2CWM supports SQL data types and database commands for creating and reading schemas. It is clear that in order to create and read schemas, scanning of ER libraries must be performed. Figure 3 clearly illustrates such example.)(Page 459, paragraph 3); (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models; and wherein converting physical aspects comprises:(g) scanning through the relational catalogs; (h) for a first of the relational catalogs, creating a corresponding first DBMS catalog in the relational database; (i) for each of the relational schemas in the first relational catalog, creating a corresponding DBMS schema in the corresponding DBMS catalog to hold corresponding information; and (j) processing each of the relational

schemas to produce corresponding information for the corresponding DBMS schema (For the remainder of steps b-j are steps found in the user manual of the ER2CWM tool.)(Page 461, paragraph 1).

It would have been obvious to a person of ordinary skill in the art at the time of Applicant's invention to modify the teachings of Teorey with the teachings of Farpinyo to include a method wherein converting logical aspects comprises the operations of: (a) scanning through the ER libraries; (b) for a first of the ER libraries, creating a corresponding first design library; (c) for each of the ER models in the first ER library, creating a corresponding design model in the corresponding first design library to hold corresponding information; (d) processing each of the ER models to produce corresponding information for the corresponding design model; (e) determining if there are any references between the ER models; and (f) if there are any references between the ER models, specifying corresponding references in corresponding design models; and wherein converting physical aspects comprises:(g) scanning through the relational catalogs; (h) for a first of the relational catalogs, creating a corresponding first DBMS catalog in the relational database; (i) for each of the relational schemas in the first relational catalog, creating a corresponding DBMS schema in the corresponding DBMS catalog to hold corresponding information; and (j) processing each of the relational schemas to produce corresponding information for the corresponding DBMS schema with the motivation to facilitate database design, creation, and maintenance via a standard CWM format that can also be ported for use in other environments. (Farpinyo, Abstract).

Conclusion

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farhan M. Syed whose telephone number is 571-272-7191. The examiner can normally be reached on 8:30AM-5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeffrey Gaffin can be reached on 571-272-4146. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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